CLAIMS

1. A process for sequestrating carbon emitted into the atmosphere, characterized in that it comprises:

   a) a step for concentrating CO_2 in the liquid phase;

   b) a step for electro-reduction in an aprotic medium to a compound in which the carbon changes to oxidation number +3 in the form of oxalic acid or formic acid;

   c) if appropriate, a step for re-extracting oxalic or formic acid in the aqueous phase; and

   d) a step for mineralization by reacting said compound with a compound of an element M, producing a mineral in which the atomic ratio C/M is about 2/1.

2. A process according to claim 1, characterized in that step a) for concentration in the liquid phase consists of liquefying CO_2, the liquid CO_2 then being obtained under pressure, for example in the supercritical state.

3. A process according to claim 1, characterized in that step a) for concentration in the liquid phase consists of absorbing CO_2 in a polar aprotic liquid, not miscible with water or miscible with water in various proportions.

4. A process according to claim 1, characterized in that step a) for concentration in the liquid phase consists of absorbing CO_2 in an aprotic ionic liquid not miscible with water or miscible with water in various proportions.

5. A process according to claim 4, characterized in that said ionic liquid consists of 1-butyl-3-methylimidazolium hexafluorophosphate.

6. A process according to claim 1, characterized in that step a) for concentration in the liquid phase consists of absorbing CO_2 in an aqueous phase containing an alcohol and/or an amine.

7. A process according to claim 1, characterized in that step a) for concentration in the liquid phase consists of absorbing CO_2 in the hydrated form, said concentration being activated by an enzymatic pathway.

8. A process according to claim 7, characterized in that the hydration activating enzyme is carbonic anhydrase.

9. A process according to claim 8, characterized in that the solution obtained is then recycled to a process for absorption in the aqueous phase in the presence of an alcohol and/or amine in accordance with claim 6.

10. A process according to claim 6 or claim 9, characterized in that the aqueous solution obtained is recycled to a liquefaction process in accordance with claim 2.

11. A process according to claim 6 or claim 7, characterized in that the aqueous solution obtained is transferred to an ionic liquid medium which is insoluble in water by a liquid-liquid extraction process.

12. A process according to one of claims 1 to 11, in which the electro-reduction step b) is carried out at a pH in the range 3 to 10 and with an anode maintained at a potential of +0.5 to -3.5 volts with respect to the normal hydrogen electrode.

13. A process according to claim 12, in which the pH is in the range 3 to 7.

14. A process according to claim 12 or claim 13, in which the anode used in the electro-reduction step is constituted by platinum, diamond-doped with boron or carbon doped with nitrogen.

15. A process according to one of claims 1 to 14, in which the electro-reduction step b) is carried out in liquid CO_2 under pressure.

16. A process according to one of claims 1 to 15, in which the compound from electro-reduction step b) is oxalic acid or an oxalate.

17. A process according to claim 16, in which the oxalic acid or oxalate, obtained in a non-aqueous medium, is re-extracted using an aqueous phase.

18. A process according to one of claims 1 to 17 in which, at the end of step a), liquid CO_2 is injected into a subterranean CO_2 store.

19. A process according to claim 18, in which electro-reduction step b) is carried out in the subterranean CO_2 store.

20. A process according to one of claims 1 to 18, in which the final mineralization step consists of attack of a carbonated mineral by an aqueous solution of oxalic acid or formic acid from the electro-reduction step.

21. A process according to claim 19, in which said carbonated mineral consists of a calciferous or magnesia-containing carbonated mineral.

22. A process according to one of claims 1 to 20, in which the element M is calcium and the mineral formed is Whewellite, $CaC_2O_4.H_2O$.

23. A process according to one of claims 1 to 21, in which the mineralization step takes place by bringing the aqueous solution of oxalic acid or formic acid from the electro-reduction step into contact with a calciferous or magnesia-containing sedimentary rock.

24. A process according to one of claims 1 to 22, in which the final mineralization step is carried out by injection into the substratum.